

## Tennessee Pollution Prevention Partnership Success Story



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### Digital Processes Reduce Silver Photographic Fixer Use

#### The Member

James H. Quillen VA Medical Center is a tertiary care facility providing a full range of patient care services, with state-of-the-art technology as well as education and research. Comprehensive health care is provided through primary care, tertiary care, and long-term care in areas of medicine, surgery, psychiatry, physical medicine and rehabilitation, neurology, oncology, dentistry, geriatrics, and extended care. In addition to providing acute care, the James H. Quillen VA Medical Center offers geriatric and rehabilitation services through its 120-bed Nursing Home Care Unit. The facility also operates a 348-bed Domiciliary that offers a variety of treatment options, which includes a homeless inpatient treatment program and homeless outreach. James H. Quillen VA Medical Center has an active affiliation with the James H. Quillen College of Medicine at East Tennessee State University. The medical school is housed on the grounds of the VA Medical Center and is utilizing the property through Enhanced-Use Leasing agreement. Over 300 University residents, interns, and students are trained at the James H. Quillen VA Medical Center each year. There are also nursing student affiliations with East Tennessee State University, University of Tennessee, Vanderbilt University and five other nursing schools. There are other major university affiliations with our medical center involving dentistry, pharmacy, social work, and psychology. A U.S. National Cemetery is also located on the grounds of the VA.

#### The Story

Many photographic fixers used with traditional x-rays contain silver thiosulfate. Silver exposure in high enough concentrations can cause "argyria", a bluish-gray discoloration of the skin. Wastes containing a silver concentration of 5.0 parts per million (ppm) or more are also

considered a hazardous waste upon disposal. In the year 2000, the James H. Quillen VAMC utilized photographic fixer in processes in the X-ray, Radiation Oncology, Dental, and Print Shop Departments. Annual amounts of fixer generated totaled an average of 6000 lbs. Until 2005 the facility utilized a silver recovery device, which removed silver from the fixer through electrolysis. Although silver recovered was recycled and sold with the approval of the POTW, the remaining fixer containing concentrations below 5.0 ppm was still discharged for further treatment.

#### The Success

In 2001 processes in the X-ray department, the largest user of photographic fixer, were replaced with digital technology reducing silver fixer use by 90%. In September 2007, processes in the Radiation Oncology Department also went digital. This was the final phase of the project and reduced waste fixer generation by another 25 lbs. monthly or 300 lbs. annually. Shipping fees associated with the fixer prior to shifting to digital technology were approximately \$3000 annually. Additionally, the reduction of the fixer has been an instrumental step in changing the James H. Quillen VA Medical Center status from a large quantity to a small quantity hazardous waste generator, which has also reduced associated annual permitting fees. Total costs related to waste silver fixer in 2008 are expected to be less than \$100.

#### The Pollution Prevented

New digital technology has decreased the amount of photographic fixer generated annually from an average 6000 lbs. to less than 200 lbs, or approximately 97%. Implementing this technology has reduced the likelihood of spills, employee exposure, and the environmental footprint of the facility in general.

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